Self-reported use of medicines among university students in Oslo, Norway

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ABSTRACT

Background: Medicine use can be used as an indicator of state of health in a population. Knowledge about health and medicine use among university students is scarce. ***Objective***: The aim of this study was to analyse medicine use in relation to age and gender in an university student population. ***Methods***: A survey on health and medicine use among students was carried out at the University of Oslo, Norway, in 2003 by means of a postal questionnaire. In all, 45% (789 of 1750) students participated. Students younger than 30 years of age (n=604) were included in the study of medicine use. ***Results***: More female (77%) than male (53%) students reported use of medicines during the preceding four weeks. Female students had used more over the counter analgesics and more psychotropic drugs than the males. One in five students reported daily or weekly use of allergy medicines. ***Conclusions***: This study showed that female university students below 30 years of age used more medicines than their male counterparts. The gender difference was mainly due to a higher use of analgesics among women. The study was performed during the pollen season in spring, and the high proportion of allergy medicine users indicates that many university students may have symptoms that can influence on their academic performance during spring exams.

Legal drug use is an important indicator of the state of health in a population: High medicine sales or high consumption of a medicine indicates a high prevalence of the disease or symptoms the medicine has an effect on. The Norwegian Health Survey in 1995 revealed that half of the population had used one or more types of medicines during the preceding 14 days (1). More females (56%) than males (43%) had used medicines, and medicine use increased with age for both genders. These gender and age differences are also found in studies in other countries (2,3). People with short education are found to use more medicines than people with long education (4).

State of health and use of medicines have been studied in adolescents (5,6) and in the general population in Norway (7,8). There has been little focus on health and legal drug use among university students in Norway and in other countries. Recent studies have shown an increase in mental health problems among university students (9). The rates of increased psychological distress are found to be significantly higher among university students than among the general population in Canada (10). Likewise, a UK study in higher education establishment indicated that the health of students is poor relative to that of their peers, and it seemed that the students' emotional health was more of a problem than their physical health (11).

This study aims to describe self-reported medicine use among Norwegian university students in relation to age and gender.

MATERIAL AND METHODS

In 2003, the Student Health Service at the University of Oslo, Norway, launched a project to study health and welfare among students before and after the implementation of the Quality Reform (12). The reform was a multiple-level reform: a new *degree structure* and a *new evaluation system* as an answer to the Bologna Declaration on international standardization of education (13). Further, a *student loan reform*, which awarded students with a normal progression by converting 39% of the loan to grant, and finally it was an *education reform* with a stronger focus on quality in the learning environment.

The Oslo Student Health and Welfare Study (OSHWS) was collaboration between the Student Health Service and the University of Oslo. In all, 31882 Norwegian citizens were registered in the Student Archive in 2003. A random sample of 1800 was selected to receive a 4-page structured, self-completion questionnaire by mail. Of these, 50 were excluded due to missing address. The remaining 1750 student received the questionnaire in May 2003 and an identical follow-up questionnaire in April 2005. The response rate was 45% (789) in 2003.

This paper analyses the medicine use reported in 2003. The age of the respondents ranged from 18 to 74 years (mean 27.8, median 25.0). Almost 77% (604) were younger than 30 years of age, and 9% (76) were older than 40 years. As medicine use increases with

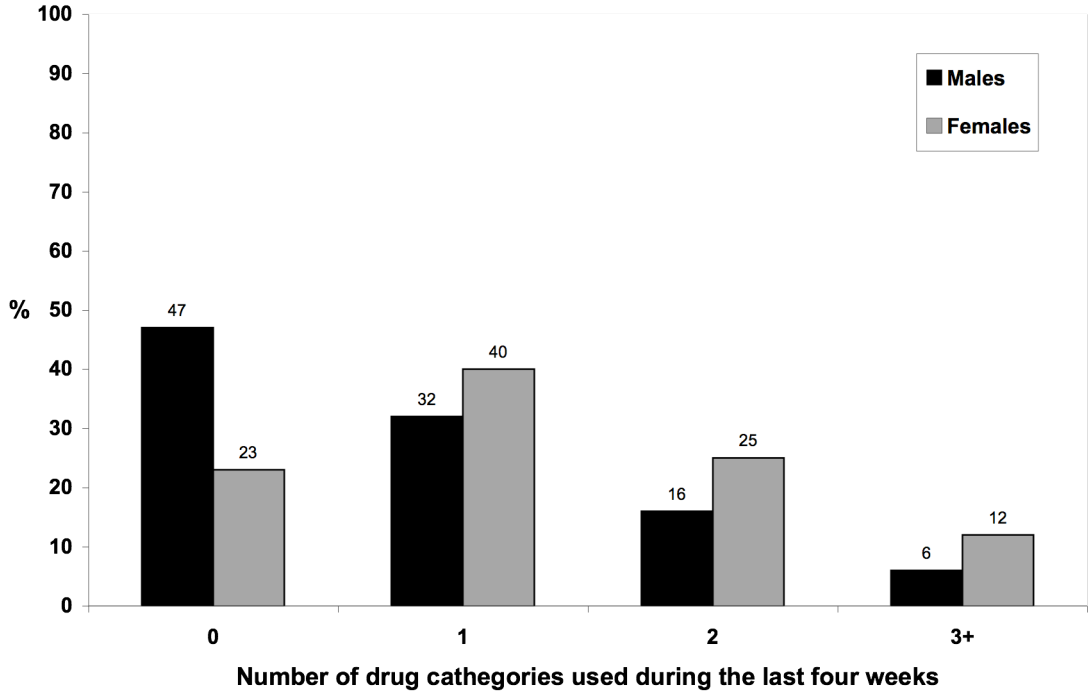

Figure 1. Proportion of students aged 18-29 years using 0, 1, 2 or ≥ 3 different drug categories. Spring 2003, University of Oslo, Norway, n=604.

age (1-3), we wanted to study use in the younger age groups that included the majority of the students. Those who were 30 years or above (n=185) were therefore excluded from our analyses. The remaining 604 students were divided into two age groups: 18-24 years and 25-29. Mean age was 24.0; median 24.0. Sixty-seven percent were females.

The questionnaire explored issues related to health, life-style, personality traits and study situation in addition to demographic data, and was based on a selection of validated questions from other surveys such as the Oslo Health Study in 2000-2001 (14). Reminders were sent approximately three weeks after the questionnaires were first sent out.

Medicine use was recorded using a question from the Oslo Youth Health Study (14) with the following questions and response categories: "How often during the last four weeks have you taken a) over the counter (OCT) analgesics b) prescription analgesics c) allergy medicines d) asthma medicines e) hypnotics f) anxiolytics g) antidepressants h) other prescription medicines?" The answering categories were given as 1) Never; 2) Daily; 3) Every week, but not daily; 4) Less often than every week; 5) Not taken during the last four weeks. Persons who answered 2, 3 or 4 were defined as medicine users.

Bivariate analyses (Fisher's Exact Test) were performed by use of SPSS version 14. The significance level was set to $p \leq 0.05$. The Oslo Student Health and Welfare Study was reported to the Privacy Issues Unit, Norwegian Social Science Data Services. It was also approved by the National Committee for Research Ethics in Norway.

RESULTS

In all, 53% of the male and 77% of the female students had used medicines during the last four weeks before they answered the questionnaire (Figure 1). Most of the students had only used one type of medication, but 6% men and 12% women reported use of three or more drugs.

None of the students used analgesics daily, but 35% males and 67% females had used OTC analgesics during the last four weeks, while 4% males and 5% females had used prescription analgesics (Table 1). Among men the amount of OTC users and users of the group "other medicines" were higher in the oldest age group as compared to the youngest ($p=0.001$ and $p=0.03$, respectively). No other differences in drug use were found between the two age groups (Figure 2).

Although there were some gender differences in frequency of use of allergy medicines, male and female students had rather similar proportion of users of these drugs (28-24%). One in five students used allergy medicines daily or weekly. There were no gender differences in use of asthma medicines. Six percent of the students had used asthma medicines during the last month, and 3.5% used asthma medicines daily.

Altogether 2% males and 6% females ($p=0.018$) were using one or more of the three psychotropics listed; antidepressants being the largest group. More

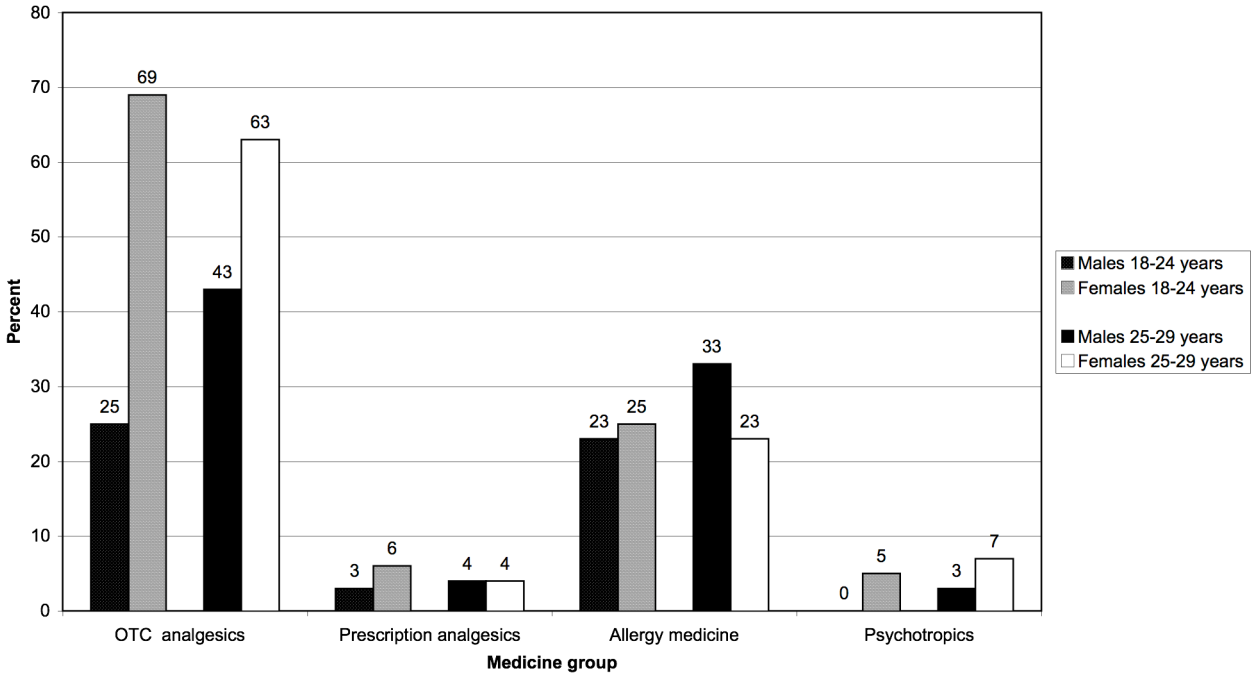

Figure 2. Proportion of students aged 18-29 years using different types of medicines during four weeks in spring 2003, University of Oslo, Norway, n=604.

Table 1. Number (%) of students at the University of Oslo, Norway, (n= 604), using different groups of medicines during a four week period in spring 2003.

	Frequency of use	OTC analgesics	Prescription analgesics	Allergy medicine	Asthma medicine	Hypnotics	Anxiolytics	Anti-depressants	Other prescription medicines
Males	Daily	0**	0	25 (12.9)*	8 (4.1)	0	0	1 (0.5)	9 (4.6)**
N=198	Weekly, but not daily	7 (3.6)	0	9 (4.6)	1 (0.5)	0	0	1 (0.5)	1 (0.5)
	Less than weekly	61 (31.0)	7 (3.6)	20 (10.3)	4 (2.0)	1 (0.5)	0	0	8 (4.1)
	No use during the last four weeks/ Never	129 (65.5)	189 (96.4)	140 (72.2)	183 (93.4)	195 (99.5)	196 (100)	194 (99.0)	177 (90.8)
Females	Daily	0	0	52 (13.1)	13 (3.2)	1 (0.3)	1 (0.3)	10 (2.5)	62 (15.5)
N=406	Weekly, but not daily	54 (13.5)	3 (0.8)	29 (7.3)	5 (1.2)	3 (0.8)	1 (0.3)	0	10 (2.5)
	Less than weekly	213 (53.1)	17 (4.3)	15 (3.8)	5 (1.2)	8 (2.0)	6 (1.5)	1 (0.3)	19 (4.8)
	No use during the last four weeks/ Never	134 (33.4)	378 (95.0)	302 (75.9)	378 (94.3)	387 (97.0)	391 (98.0)	388 (97.2)	308 (77.2)

Differences between males and females (Fisher's Exact Test) * $p \leq 0.05$ ** $p < 0.001$

females than males reported use of other prescription medicines.

DISCUSSION

More female than male university students had used one ore more medicines during the last four weeks. This is in concordance with findings in the general population in Norway and other countries (1-3). The largest gender difference was found in use of OTC analgesics in the age group 18-24 years (69% women versus 25% men, Figure 2). Such gender difference is also found among Norwegian adolescents aged 15-16 years (5). However, whilst the male university students had almost the same proportion of OTC analgesics users as the male adolescents (23%), the female students reported higher use than the younger girls (69% versus 54%). The proportion among male students rose to 43% in the age group 25-29 years, whereas the female proportion remained stable. This indicates that females reach adult level of analgesics use at an earlier age than males do.

None of the university students reported daily use of OTC analgesic. This is in contrast to studies of Norwegian adolescents (1% daily users) (5) and adults aged 20-49 years (1-2% daily users) (15). A reason for

this may be that university students are a selected group of people with rather good health, i.e. people with chronic pain symptoms may not be a part of this group.

Almost 13 percent of the students used allergy medicines daily. One in five reported daily or weekly use of such drugs. During 2004 13.7% of the general population aged 20-29 was prescribed allergy medicines (16). The high prevalence of daily or weekly use of allergy medicine is probably due to the fact that data were collected in the pollen season in spring. However, spring is also the examination period, and the results shows that many university students suffer from allergy symptoms that might influence their examination results in a negative direction.

More women than men used psychotropic drugs. The female university students in our survey also reported more mental distress than the males did (17). The same gender difference in mental distress is found in the general population (18). Few students reported use of antidepressants (1% of males and 2.8% of females). According to the Norwegian Prescription Data Base 3.2% men and 4.9% women in the general population aged 20-29 years were prescribed antidepressants in 2004 (16). The smaller figures among university students might be a result of the selection of healthy people into higher education, but it may also be that students with health problems have been less likely to answer the questionnaires.

The female students were more likely than the males to report use of other prescription medicines. These figures probably include contraceptive pills. However, data from the Norwegian Prescription Database show that 28% of all women aged 15-49 years received contraceptive pills in 2006 (19), and the proportion of users are highest in the age group 20-29 (20). As the group "other prescription medicines" also will include other medicines than oral contraceptives, there is probably an underreporting of p-pills in our survey. The low frequency of reporting might reflect that many women do not regard oral contraceptives as medicine as they do not use them to cure a disease.

The low response rate dictates the need for caution in interpretation of the results. One reason for non-response might be that the survey was conducted during the examination period. Students who experience high stress during this period might be less likely than others to spend time to participate in a survey. As stress and anxiety is a reason for use of psychotropic medications, this may have led to an underestimation of such medicines in our study.

Thirty percent (530) of the students in the survey population were not registered as students the following term, indicating that they had finished or terminated their studies at the University of Oslo (21). Of these, only 32% filled in the questionnaire, as compared to 49% among those who were still registered (unpublished data). A study of drop outs from Norwegian universities revealed that 46% of all students left their original study place to start on a new study; and another 10% stopped studying (22). Although some students may drop out because of health problems, it is probable that the low response rate among the students who were about to drop out of the curriculum at the University of Oslo, was due to reasons that did not influence their use of medication.

A comparison of age and gender of the respondents with that of the total student population at the University of Oslo in 2003 revealed that the response group comprised of slightly more women (65% in the response group as compared to 60% in the student population) (17). As women use more medicines than men, the higher amount of women in the response group might lead to an overestimation of medicine use in this study.

CONCLUSION

The university students below the age of 30 in this study show the same gender difference in medicine use as the general population, with women reporting more use than men. The study was performed during the pollen season, and revealed that one in five students used allergy medicine daily or weekly. This indicates that many university students may have symptoms that can influence on their academic performance.

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